



## WOUNDING DETECTION SYSTEM

- ✓ AUTOMATIC SEARCH SYSTEM
- ✓ FIRST AID TO WOUNDED COMBATANTS ON BATTLEFIELD

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## AUTOMATIC SEARCH SYSTEM AND FIRST AID TO WOUNDED COMBATANTS ON THE BATTLEFIELD

Statistical information: rendering first aid to wounded combatant during 40 minutes after wounding enable to save about 60% of wounded persons additionally.

Insurance charge per one combatant of the UNO peacekeeping forces in region of military conflicts in case of his decease is 108 000 Euro. In case of wounding, according to severity and consequences of injury, insurance charge is from 0 to 108 000 Euro. The main goal of the search system is to significantly increase the probability of the combatants' survival after getting gunshot wound on the battlefield (realization of so-called "golden hour").

### The goal is achievable due to the following unique features of the system:

- It provides the mobile hospital with timely information concerning the nature of a wound, as well as the combatant's state and whereabouts. Such information is sent to the hospital automatically through the radio channel in few seconds after the bullet hits the combatant's body.
- Few seconds after the wound, the combatant can automatically get an injection of pain-relieving or blood-stanching medicine.

### The system includes:

1. 6 miniature telemetric sensors which are installed on the combatant's body – one on each hand and leg, on the trunk, neck and head. The sensors allow identifying an approximate portal of the bullet's entry and defining whether the bone was wounded or the soft tissues only.

2. Automatic portable injector which is installed on the leg above knee.

3. Miniature optical pulse- and oxy-meter are installed on the ear lobe to measure the pulse parameters and oxygen dynamics in the blood after the bullet hits the combatant's body.

4. Two sensors connected to the combatant's personal radio set; their role is to identify the body's orientation in space and coordinates of the wounded combatant on the battlefield.

Information from all sensors is sent automatically to the combatant's personal radio set in real time and automatically retransmitted to the mobile hospital where data receipt and processing mobile centre is located. The centre is equipped with a special multi-channel radio-receiver connected to the PC; digital map of the region of interest with colour markers corresponding to the combatants' whereabouts in real time is provided by software, it also includes the program of automatic assortment of the wounded combatants.

The operator in centre has a possibility to get information urgently about wounded combatant, assortment of the wounded combatants by: 1) the parts of bodies have hit by bullets; 2) level of oxygen in the blood; 3) bodies' orientation; 4) bones or soft tissues wound.

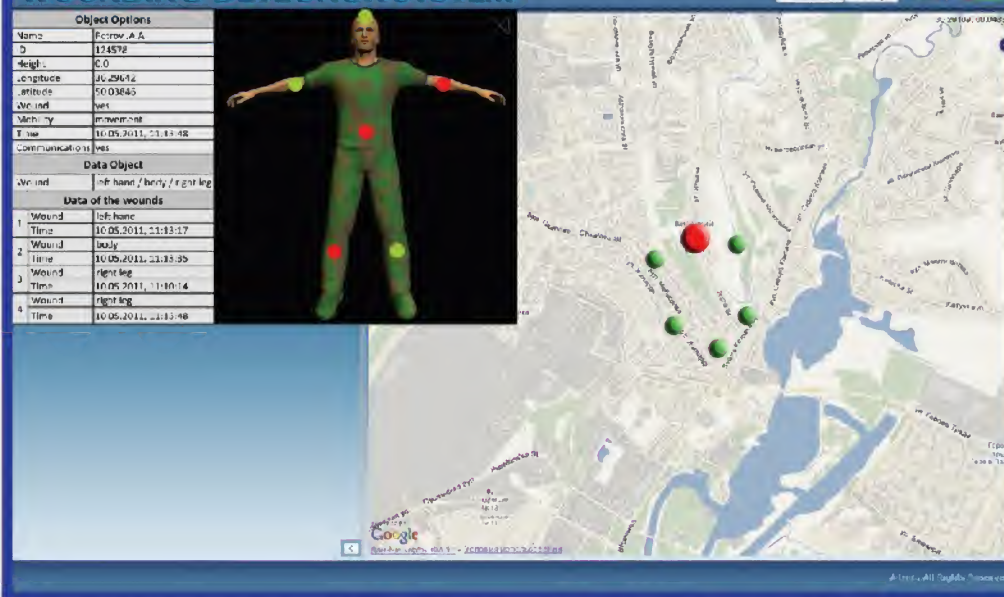
### Development status:

1. The basic modules of the system have undergone field tests during which the mechanisms of interaction of a bullet with the bones and soft tissues of dead animals have studied. Special radio- and telemetric

## The user interface window:

display site map and information about a wounded combatant

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sensors are installed on these animals.

2. The sensors detecting human body orientation in space at the moment of its falling have also tested.
3. The miniature computer pulsimeter and telemetric counter of oxygen level in blood in real time has been under testing yet.
4. The possibility of including unmanned aerial vehicle (UAV) with the following functions into the system has been examining now:

- Wounded combatant is homing automatically;
- Infrared TV monitoring of the wounded combatant detecting the blood on body;
- Retranslation of wounded combatant's vision to a hospital in real time;
- Medical remedies of first aid (such as portable oxygen generators, medicaments etc.) are delivered to the group of combatants (in case of necessity) by airlift.

Having digital map of region and timely information about the wounded combatants state and whereabouts it is possible to provide manual UAV control from the remote computer centre.

### Potential system end users:

1. Military forces.
2. Police forces.
3. Emergency Control Ministry (ECM) forces.
4. Subdivisions of counter-intelligence agencies, internal forces, anti-terrorist units.

It's planning to conduct the complex system testing in real tactical situation in March, 2011. Experimental group will be anti-terrorist unit.

This system can be adapted for the customer individually after purchasing. Upgrading within customer's requirements is available.